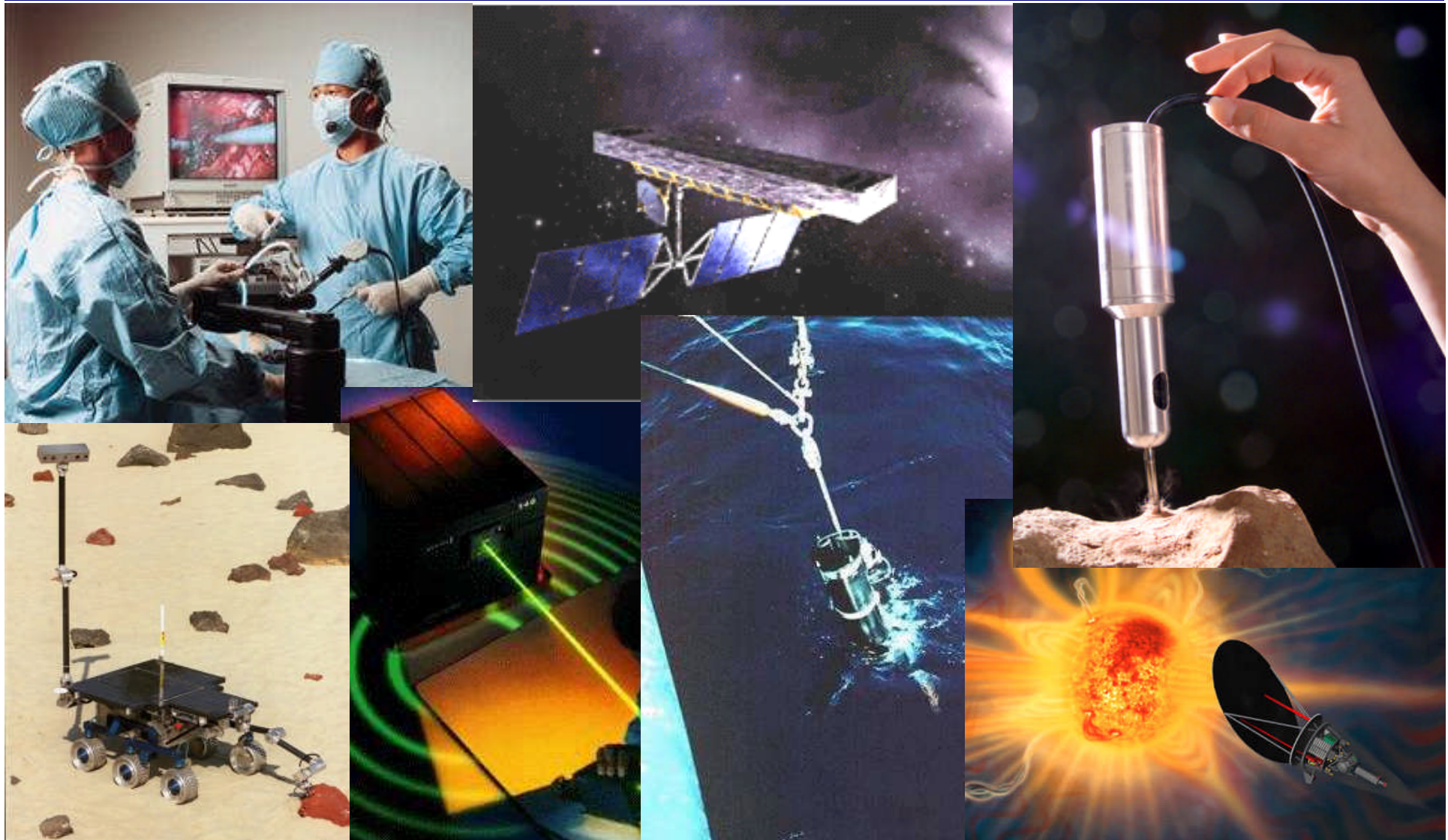


Federal SBIR/STTR Programs





SBIR/STTR Programs

**Small Business Innovation Research
Small Business Technology Transfer**

Wayne Schober

**SBIR Program Manager
NASA Jet Propulsion Laboratory**

June 5, 2006



Agenda

- **Federal SBIR/STTR Program - What is it**
- **Information on 11 agency programs and contacts**
- **NASA SBIR Program Specifics**
- **NASA 2006 Innovation Research Areas of Interest**
- **Changes to the Solicitation from FY05 to FY06**
- **Why Participate in SBIR**



Federal SBIR Program

- 11 Federal Agencies
- \$2.5 Billion Program in FY06
- Multiple Solicitation Dates



SBIR Program Funding

PL 106-554

- All Federal Agencies with an Extramural R&D Budget of over **\$100M (SBIR) or \$1B (STTR)** must participate in the SBIR and STTR Programs
- Participating SBIR Agencies must reserve **2.5%** of their extramural budget for SBIR and **0.3%** for STTR. Only 5 agencies, DoD, NIH, NASA, DoE, and NSF, participate in the STTR program
- **Extramural budget** is agency R&D (including FFRDCs and contractor operated facilities) less funds for government owned and operated facilities.



What is SBIR?

SBIR is a Congressionally Mandated Program for small businesses to:

- Stimulate technological innovation
- Increase private sector commercialization of federal R&D
- Increase small business participation in federally funded R&D
- SBIR is the largest source of early-stage technology financing in the U.S.



How do you Qualify for SBIR?

- Small Business of 500 or fewer employees
- Principal Investigator must spend more than 1/2 of time employed by the proposing firm
- During Phase I, a minimum of 2/3 effort must be performed by the proposing firm
- During Phase II, a minimum of 1/2 of the effort must be performed by the proposing firm
- Work must be performed in the United States



Three Phase Programs

	<u>SBIR</u>	<u>STTR</u>
Phase I Project Feasibility	6 months up to \$100K	6-12 months up to \$100K
Phase II Project Development To Prototype	2 yrs up to \$750K	2 years up to \$750K
Phase III Commercialization	non-SBIR/non-STTR funds	

* Duration and funding limits are variable by agency



What is STTR

The Small Business Technology Transfer Program is a Congressionally Mandated Program for small businesses to:

- Move ideas from research institutions to market
- Enable researchers to pursue commercial application of technologies
- Bridge the funding gap between basic research and commercial products



How do you Qualify for STTR?

- Small business must perform a minimum of 40% of the work; **research institution a minimum of 30%**
- Research institution is a FFRDC, college or university, or non-profit research institution; no size limit on research institution;
- Small business must manage and control the STTR funding agreement
- Principal Investigator may be at the small business **or research institution**
- Small Business of 500 or fewer employees

SBIR/STTR Patent Rights



- Small businesses retain intellectual property rights
- Government receives royalty-free license for use of world wide patent rights to any invention development
- STTR must have written agreement allocating intellectual property rights among participants
- After the four year period the Government has unlimited rights in the SBIR data



SBIR Phase I Statistics

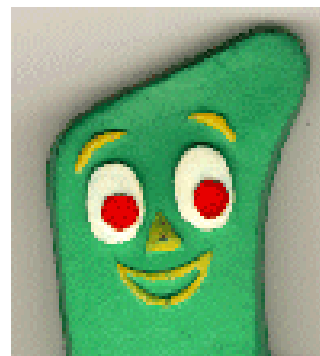
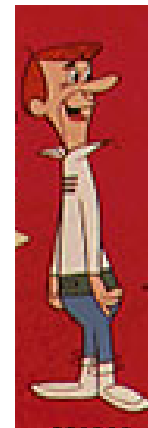
Winners are “small” businesses

- 69% of Phase I winners are companies with 20 people or less
- 41% of Phase I winners are companies with 10 people or less

Winners are relatively new to the program

- 39% of Phase I winners are first-time DoD winners
- 79% of Phase I DoD winners have 1 to 5 previous awards

Agency Programs are all ... different





SBIR/STTR Solicitation Dates

Solicitation Dates May Change! - check the Agency specific website

2006 Solicitation	Open	Close
Homeland Security	Feb 10	Mar 10
National Science Foundation	Mar 13	Jun 13
DoD STTR	Mar 14	Apr 14
EPA	Mar 23	May 24
DoD 2006.2	Jun 14	Jul 14
NASA	Jul 7	Sep 7
DoD 2006.3	Sep 13	Oct 13
DOE	Sep	Dec
DoD	Nov	Dec
NIH	Jan 16	Dec 2

Others - Solicitations dates are listed on <http://www.sba.gov/>
and <http://www.dodsbir.net/solicitation/>



Contracts or Grants

Contracting Agencies

DOD	\$1,081M
NASA	\$ 105M
EPA	
DOT	
ED	
DOC	
DHS	

Granting Agencies

HHS/NIH
ED
NSF
USDA
DOE

Generalities of Differences

Internal Proposal Reviews

External Proposal Reviews
Broader Research Topics
More Open Communications
Potential “Gap” Funding



Ten Organizations in DoD SBIR 1,081M Budget

AIR FORCE	29.2%
ARMY	21.6%
NAVY	23.4%
Missile Defense Agency (MDA)	11.7%
DARPA	6.3%
Office of the Secretary of Defence (OSD/DDR&E)	5.6%
- - -	
Special Operations Command (SOCOM)	1.2%
Joint Service – Chemical Biological Defense	0.5%
DTRA	0.4%
NGA (was NIMA)	0.1%

DoD SBIR Points of Contact



DoD Program Manager –

Mr. Michael Caccuitto (703) 588-8610

Air Force - Mr. Steve Guilfoos (937) 656-9062

Navy - Mr. John Williams (703) 696-0342

Army - Ms. Susan Nichols (703) 806-0859

DARPA - Ms. Connie Jacobs (703) 526-4162

Missile Defense Agency - Mike Zammit (703) 553-3408

DoD SBIR Points of Contact



OSD DDR&EM

Teresa Puretz (703) 693-0458

Defense Threat Reduction Agency

Lt. Col Kelley (703) 767-2356

Special Ops

Ms. Karen Pera (813) 828-7549

Nat Geospatial Agency

Ms. Nancy Groves nancy.c.groves@nga.mil

NASA SBIR/STTR 2006 Budget



SBIR \$105M
STTR \$13M



SBIR - Phase I Contracts: \$100K (6 months)
STTR - Phase I Contracts: \$100K (12 months)
SBIR/STTR - Phase II Contracts: \$600K (2 years)



NASA Organization

Four Mission Directorates:

1. **Aeronautics Research** (www.aerospace.nasa.gov)
2. **Exploration Systems** (www.exploration.nasa.gov)
3. **Science** (www.science.hq.nasa.gov)
4. **Space Operations** (www.hq.nasa.gov/osf)

NASA Interests for 2006 Innovation Research



Aeronautics Research (www.aerospace.nasa.gov)

A1 Aviation Safety

Vehicle-centric 4D Trajectory and Mission Management, Integrated Resilient Aircraft Control, Aircraft Aging & Durability, Aircraft Icing Avoidance and Tolerance, Crew Systems Technologies for Improved Aviation Safety, Aviation External Hazard Sensor Technologies, Integrated Vehicle Health Management

A2 Fundamental Aeronautics

Materials and Structures for Future Aircraft, Combustion for Aerospace Vehicles, Aero-Acoustics, Aeroelasticity, Aerodynamics, Aerothermodynamics, Aircraft Control and Dynamics, Revolutionary Experimental Capabilities and Flight Research for Fundamental Aeronautics, Aircraft Systems Analysis, Design & Optimization, Rotorcraft

A3 Airspace Systems

Airspace Traffic Management, Airportal Enhancement

A4 Aeronautics Test Technologies

Test Measurement Technology, Test Techniques & Facility Development

NASA Interests for 2006 Innovation Research



Exploration Systems (www.exploration.nasa.gov)

X1 Systems Analysis and Integration,

Full Data Coherency Systems for Engineering Systems Modeling and Simulation, System Lifecycle Integration of Cost and Risk Models

X2 Avionics and Software

Integrated Vehicle System Health Management, Spacecraft Autonomy, Software Engineering Technologies for Human-Rated Spacecraft, Low Temperature, Radiation Hardened Avionics

X3 Environmental Control and Life Support (ECLS)

Spacecraft Cabin Atmospheric Management and Habitation Systems, Water Processing and Waste Management, Crewed Spacecraft Environmental Monitoring and Control and Fire Protection Systems

X4 Lunar In-Situ Resource Utilization (ISRU)

Lunar Regolith Excavation and Material Handling, Oxygen Production from Lunar Regolith, Lunar Polar Resource Prospecting and Collection

NASA Interests for 2006 Innovation Research



Exploration Systems (www.exploration.nasa.gov)

X5 Extreme Environment Mechanisms

Motors and Drive Systems for Cryogenic Environments

X6 Lightweight Structures and Materials

Radiation Shielding Materials and Structures, Lightweight Pressurized Structures Including Inflatables, Material Concepts for Lightweight Structure Technology Development

X7 Operations of Exploration Equipment

Supportability Technologies for Long-Duration Space Missions, Human-System Interaction, Surface Handling and Mobility, Transportation, and Operations Equipment (Lunar or Mars)

X8 Energy Generation and Storage

Non-toxic Launch Vehicle Power for Thrust Vector and Engine Actuation, Space Based Nuclear Fission Power Technologies, Space Rated Batteries and Fuel Cells for Surface Systems

NASA Interests for 2006 Innovation Research



Exploration Systems (www.exploration.nasa.gov)

X9 Propulsion and Propellant Storage

Long Term Cryogenic Propellant Storage, Management, and Acquisition, Innovative Booster Engine Manufacturing, Componets, and Health Management, Cryogenic and Non-Toxic Storable Propellant Space Engines, Nuclear Thermal Propulsion

X10 Thermal Protection - Ablative Thermal Protection System for CEV

X11 Thermal Management - Thermal Control for Lunar Surface Systems

X12 Space Human Factors and Food Systems

Food Access Beyond Low Earth Orbit, Long-Duration Space Human Factors

X13 Space Radiation - Space Radiation Health Research Technology

X14 Exploration Medical Capabilities

Health Preservation in the Space Environment
Lunar In-Situ Autonomous Health Monitoring



NASA Directorate Interests

Science (www.science.hq.nasa.gov)

S1 Robotic Exploration of the Moon and Mars

Surface Robotic Exploration, Subsurface Robotic Exploration,
Martian Entry, Descent and Landing Sensors

S2 Robotic Exploration Throughout the Solar System

Astrobiology and Atmospheric Instruments for Planetary Exploration, In-Situ Planetary
Atmospheric Measurement Technologies, Energy Conversion and Power Electronics for
Deep Space Missions, Flexible Antennas and Electronics for L-Band Remote Sensing,
Planetary Balloons and Aerobots

S3 Advanced Telescope Systems

Precision Spacecraft Formations for Advanced Telescope Systems, Proximity Glare Suppression
for Characterization of Faint Astrophysical Objects, Precision Deployable Structures and
Metrology for Advanced Telescope Systems, Optical Devices for Starlight Detection and
Wavefront Analysis



NASA Directorate Interests

Science (www.science.hq.nasa.gov)

S4 Exploration of the Universe Beyond our Solar System

Sensor and Detector Technology for Visible, IR, Far IR and Submillimeter
Detector Technologies for UV, X-Ray, Gamma-Ray and Cosmic-Ray Instruments
Cryogenic Systems for Sensors and Detectors
Optics Manufacturing and Metrology for Telescopes
Data Analysis Technologies for Potential Gravity Wave Signals
Terrestrial Balloon Technology

S5 Instrument Technologies for Solar Science

Voltage Supplies and Charge Amplifiers for Solar Science Missions
Sensors for Measurement of Particles and Fields

S6 Earth Science Instrument and Sensor Technology

Passive Optics and Stepping Motors for Spaceborne and Airborne Platforms
Lidar System Components for Spaceborne and Airborne Platforms
Earth In Situ Sensors, Passive Microwave, Active Microwave



NASA Directorate Interests

Science (www.science.hq.nasa.gov)

S4 Exploration of the Universe Beyond our Solar System

Sensor and Detector Technology for Visible, IR, Far IR and Submillimeter
Detector Technologies for UV, X-Ray, Gamma-Ray and Cosmic-Ray Instruments
Cryogenic Systems for Sensors and Detectors
Optics Manufacturing and Metrology for Telescopes
Data Analysis Technologies for Potential Gravity Wave Signals
Terrestrial Balloon Technology

S5 Instrument Technologies for Solar Science

Voltage Supplies and Charge Amplifiers for Solar Science Missions
Sensors for Measurement of Particles and Fields

S6 Earth Science Instrument and Sensor Technology

Passive Optics and Stepping Motors for Spaceborne and Airborne Platforms
Lidar System Components for Spaceborne and Airborne Platforms
Earth In Situ Sensors, Passive Microwave, Active Microwave



NASA Directorate Interests

Science (www.science.hq.nasa.gov)

S7 Science Spacecraft Systems Technology

Guidance, Navigation and Control Beyond Low Earth Orbit (LEO)
Long Duration Command and Data Handling for Harsh Environments
Electric Propulsion
Chemical and Propellantless Propulsion For Deep Space
Power Electronic Devices, Components and Packaging
Thermal Control Technologies for Science Spacecraft

S8 Advanced Modeling, Simulation, and Analysis for Science

Automation and Planning for Complex Tasks
Distributed Information Systems and Numerical Simulation
On-Board Science for Decisions and Actions
Spatial and Visual Methods for Search, Analysis and Display of Science Data
Data Management and Visualization



NASA Directorate Interests

Space Operations (www.hq.nasa.gov/osf)

O1 Space Communications

Coding, Modulation, and Compression

Precision Spacecraft Navigation and Tracking

Communication for Space-Based Range

Antenna Technology for Spacecraft and Planetary Surface Vehicles

Reconfigurable/Reprogrammable Communication Systems

Extravehicular (EVA) Radios

Transformational Communications Technology

Long Range Optical Telecommunications, Long Range Space RF Telecommunications

Surface Networks and Orbit Access Links

Software for Space Communications Infrastructure Operations

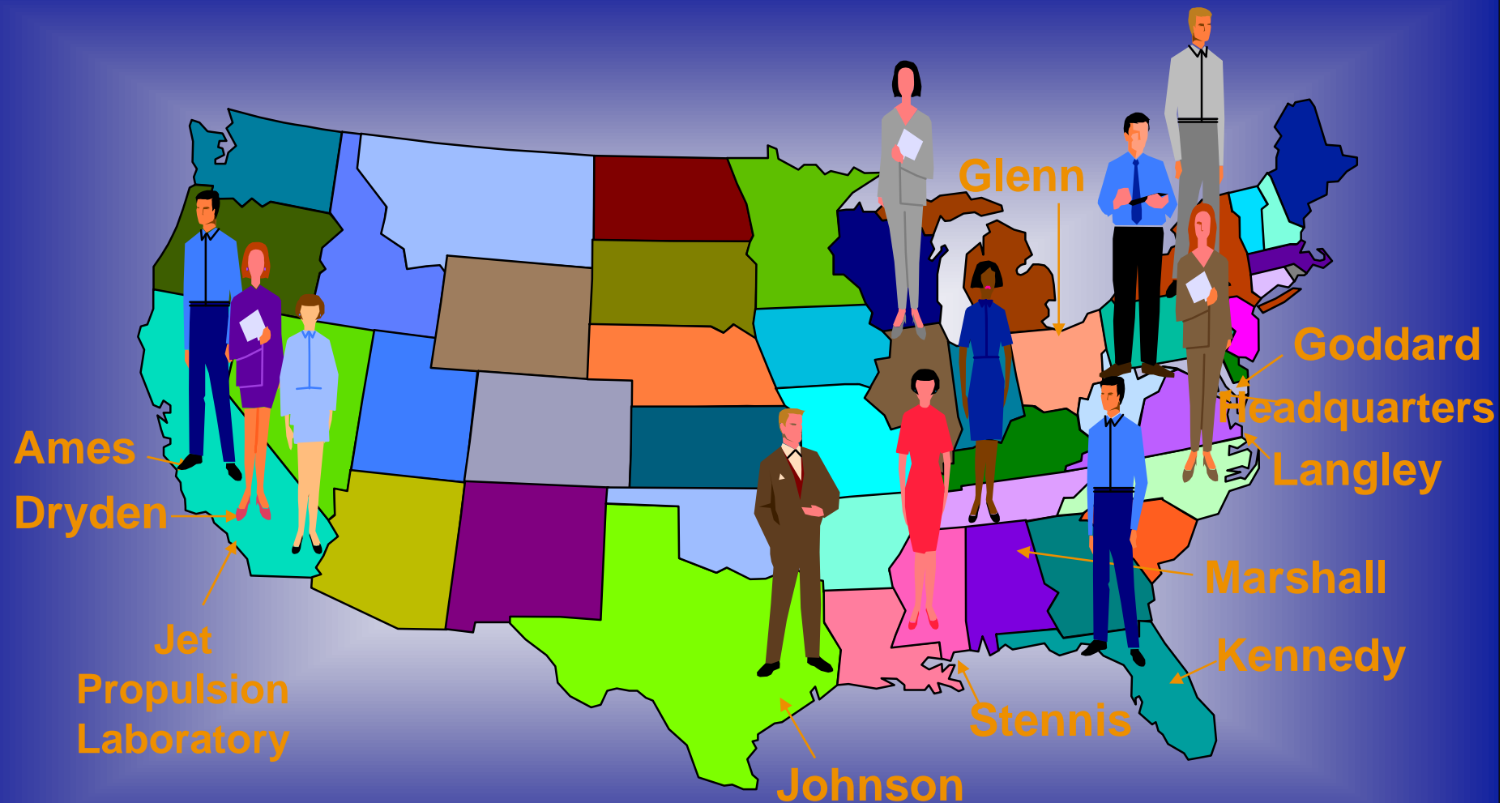
O2 Space Transportation

Automated Optical Tracking and Identification of Tumbling 3D Objects

Space Transportation Propulsion System and Test Facility Requirements and Instrumentation

Automated Collection and Transfer of Launch Range Surveillance/Intrusion Data

All Ten NASA Centers Participate In the SBIR Program





NASA Center Contacts

Ames Research Center - Geoff Lee, 650-604-6406

Information Technology (automation, planning, simulation)
Air Traffic Management Systems

Dryden Flight Research Center - Greg Poteat, 661-276-3872

Atmospheric Flight Concepts, Flight Dynamic Systems Characterization,
Flight Sensors and Airborne Instruments for Flight Research

Kennedy Space Flight Center - Chuck Griffin, 321-867-6225

Space Transportation, Space Operations, Launch Site Technologies

Langley Research Center - Bob Yang, 757-864-8020

Materials, Structures, Systems Analysis
Lidar Remote Sensing

Glenn Research Center - Gynelle Steele, 216-433-8258

Power, Propulsion, Communications



NASA Center Contacts

Goddard Space Flight Center - Jim Chern, 301-286-5836

Optics, GN&C, Sensors & Detectors, Thermal Control
Data Management and Visualization

Jet Propulsion Laboratory - Wayne Schober, 818-354-8581

In-situ sensors and robotics, Active Microwave, Sensors &
Detectors, Communications, Astronomical Observatories Technology

Johnson Space Flight Center - Kumar Krishen, 281-483-1348

Human Systems Research, Life Support and Habitation, Human Systems
Integration, In-situ Resource Utilization,

Marshall Space Flight Center - Lynn Garrison, 256-544-6719

Chemical Propulsion, Cryogenic Telescope Components, Low Thrust and
Propellantless Technologies, Particles and Fields

Stennis Space Flight Center - Ray Bryant, 228-688-3964

Geospacial Data Analysis Processing and Visualization Technologies
Rocket Propulsion Testing Systems



Submission Process

- All proposals are submitted electronically via the internet
- Make sure your proposal is received on time - late proposals are rejected
- Proposals are screened for administrative completeness and turned over to the managing NASA Center for technical review





Selection Process

NASA Phase I Evaluation Criteria:

- 1. Scientific/Technical Merit and Feasibility (50%)**
- 2. Experience, Qualifications and Facilities (25%)**
- 3. Effectiveness of the Proposed Work Plan (25%)**
- 4. Commercial Potential and Feasibility (adjectival)**



Selection Process

NASA Phase II Evaluation Criteria:

- 1. Scientific/Technical Merit and Feasibility (50%)**
- 2. Experience, Qualifications and Facilities (25%)**
- 3. Effectiveness of the Proposed Work Plan (25%)**
- 4. Commercial Potential and Feasibility (critical)**
 - Commercial Potential of the Technology**
 - Commercial Intent of the Offeror**
 - Capability of the Offeror to Realize Commercialization**



Selection Process

NASA Ranking Criteria:

- 1. Value to NASA**
- 2. Reasonable Chance of Success**
- 3. Probability that Company Can Successfully Commercialize Technology (Phase III)**

SBIR/STTR Program Schedule



2006 Program Solicitation

Opening Date: 07/07/2006

Closing Date: 09/07/2006

Selections: Nov. 2006

<http://sbir.nasa.gov>

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.





Why Participate in SBIR/STTR?

1. Over \$2.25 Billion available every year
2. Funds are NOT A LOAN - no repayment - up to \$850K capital
3. Small businesses retain intellectual property rights
4. Provides seed money to fund high risk projects
5. Develop working relationship & credibility with government R&D
6. Fosters partnerships with large corporations and academia
7. Provides recognition and visibility for your business
8. Participation attracts venture capital and other funding sources



For Further Information

- Read the web sites - they are good
- Search on sbir and an agency name e.g.
sbir nasa,
sbir air force,
sbir sba
- Call one of the agency contact names; call me
- Use the keyword search to find related topics
at: <http://www.dodsbir.net/topics/default.asp> for
the DoD solicitation

Trends in the NASA Solicitation from FY05 to FY06



Increasing Emphasis on Technology Maturity, Commercialization, Potential NASA Use, and Continued Development in Phase III Contracts

In the Phase I Proposal NASA is asking for:

1. Potential and targeted applications of the proposed technology
2. Potential customers
3. Commercialization strategy including key technical, market, and business factors



Backup Slides

- NASA SBIR Qualifications
- Things to Remember
- How to Win
- Typical Questions

SBIR is a Three Phase Program



Phase I is a 6 month, \$100K effort to determine the feasibility of the proposed innovation

- Phase I contracts are based on proposals received in response to the program's annual solicitation**

Phase II is a 2 year, \$600K research, development, and demonstration effort

- Phase II contracts are awarded to successful Phase I contractors**

Phase III is the non-SBIR funded commercialization activity based on the Phase II result

Nature of NASA SBIR Contracts



-
- **SBIR contracts are fixed price contracts to be completed on a best effort basis**
 - **Contractors own resulting intellectual property (data, copyrights, patents, etc.)**
 - **Government has royalty-free rights for government use of intellectual property**
 - **Government protects data from public dissemination for four years after contract ends**

SBIR Program Eligibility Checkpoints



- **Organized for-profit U.S. small business**
- **At least 51% U.S. owned and independently operated**
- **Small business located in the U.S.**
- **P.I.'s primary employment with small business during the project**



Some Important Facts to Remember

- Eligibility is determined at time of award
- No appendices allowed in Phase I
- The PI is not required to have a Ph.D.
- The PI is required to have expertise to oversee project scientifically and technically
- Applications may be submitted to different agencies for similar work
- Awards may not be accepted from different agencies for duplicative projects



How to Win - Suggest a Topic

- SBIR/STTR Subtopics are written for small business by researchers and managers
- Topics solicit innovative ideas to solve technical challenges
- Each topic is carefully reviewed each year
- SBIR/STTR Programs seek private sector input in selecting and refining potential topic areas for future SBIR and STTR solicitations



How to Win - Read the Solicitation

- NASA Phase I Proposals are \$70K for 6 months
- Air Force Phase I proposals \$100K for 9 months
- MDA, Army and OSD Phase I proposals NTE \$100K for 6 months
- DARPA Phase I proposals NTE \$99K for 8-12 months
- Navy Phase I proposals \$70K for 7 months plus a \$30K Option for 3 months



How to Win - Know Your Customer

- Review last year's solicitation and review the titles and some abstracts of the winning proposals in your area of interest
- If there is a pre-solicitation on the Web read and comment on the text (DoD release on the Web is May 1, 2006)
- Suggest topics areas and text, if appropriate
- Talk to the people in your technical area who write subtopics and review proposals at the agency where you intend to submit your proposal
 - Find their technical emphasis, needs, and interest
 - Solve a sponsors problem
 - Align your technology/proposal to the sponsor's final needs



How to Win - Follow the Directions

- Read the directions from the sponsoring agency
- Address all areas that will be scored in the evaluation by that agency
- Don't underestimate the importance of commercialization
- Suggest topics areas and text, if appropriate to the sponsor
- Mark appropriate proposals as "Proprietary" never "confidential". Mark only those pages that must be protected.
- Submit your proposal electronically prior to the last 24 hours



How to Win - Proposal Tips

- Start early and do your homework
- Lay out the evaluation criteria and write to satisfy them
- Don't pad the proposal to get to the 25 page limit
- Don't subcontract Government facilities or equipment with SBIR funds
- Comply with Conflict of Interest rules
- Prepare your proposal in accordance with the solicitation instructions or your proposal may be rejected administratively
- Submit your proposal electronically prior to the last 24 hours



How to Win - Form a Team

- If appropriate, form a team with universities or other companies
- Get advice from your local small business advisory resources
- Get an independent review of your proposal prior to submission



Questions

Is NASA interested in my technology ?

Review last year's solicitation for potential areas of interest
(sbir.nasa.gov)

What is NASA doing in this area of technology ?

Call SBIR Program Office at NASA center(s) that lead the subtopic that is closest to your interests and have them put you in touch with a technical person working in the subject area

Calls must be made before solicitation opens

Does my proposal need to fit into a specific subtopic?

Yes, proposals that are not responsive to the solicitation may be classified "nonresponsive" and rejected. However, the subtopics are usually broadly written.



Questions

What should my proposal look like ?

A sample proposal is available at sbir.nasa.gov –
Procurement info – Contract Admin & Closeout - NASA
SBIR/STTR Firms Library

Should I consider using consultants and subcontractors?

Yes, but remember limitations (1/3 of research work for SBIR), and no NASA Personnel

Can I submit the same proposal to different subtopics if it applies?

No, you risk having all proposals disqualified

	DOD	NASA	DOT	EPA	DOE	DHS	DOC	NSF	USDA	DoED	NIH
Award Type <i>Contract Grant</i>	C	C	C	C	G	C	C	G	G	G/C	G/C
Award Amount <i>Phase I</i>	70K-100K ^a <u>Options^c</u>	70K SBIR 100K STTR	100K	70K	100K <u>9 mos</u>	100K	75k	100K	80K	100K	100k ^b
Award Amount <i>Phase II</i>	750K	600K	720K	225K ^c	750K	TBD	300k	500K ^c	325K	750K	750K ^b
Review Process	I	I	I	I	E	I	I	E	E	I	E
Research Topics	S	S	S	S	S	S	S	B	B	S	B
Gap Funding	Y	N	N	N	Y	N	N	Y	Y	N	Y
Communication	R	R	R	R	R	R	R	O	O	O	O

C - Contract

I - Internal Review

S - Specific

R - Restricted

G - Grant

E - External Review

B - Broad

O - Open

^aVaries among DOD subcomponents.

^bDeviations permitted with justification

^cSome agencies offer Ph II options

***Agency Differences
ALWAYS CHECK
WITH AGENCIES***